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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,780	10/06/2003	Kenneth E. Anderson	495812005800	5857

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EXAMINER

BOUTSIKARIS, LEONIDAS

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/680,780	Applicant(s) ANDERSON ET AL.	
	Examiner Leo Boutsikaris	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-83 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35-37, 74-76 and 78-83 is/are allowed.
- 6) ☒ Claim(s) 1, 32-34, 39, 71-73 and 77 is/are rejected.
- 7) ☒ Claim(s) 2-31, 38 and 40-70 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/7/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 16, 39-77 are objected to because of the following informalities:

The acronym "HOE" in line 2 of claim 16 should be placed between parentheses, and the period after "element" should be deleted.

Claim 39 is objected because the word "of" should be inserted after "readout" in line 1.

In claim 40, line 4, it is suggested that the word "reconstructs" is deleted for better clarity.

Claims 40-77 inherit the deficiency of claim 39 from which they depend.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 77 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 77 recites that the same spot in the holographic media is an image spot in one direction and a Fourier transform spot in a second direction orthogonal to the first, which is confusing, since it is not clear which combination of lenses achieves which imaging result. For examination purposes, it will be taken that the spot in the holographic media is at an image plane of the signal beam.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 33-34, 39, 72-73, 77 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu (US 2002/0015376).

Regarding claims 1, 39, Liu discloses a method and a system for holographic recording and reading of data in a holographic medium, wherein a reference beam 112 and a first signal beam 114 corresponding to a first data are made to interfere inside holographic medium 100 at a

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location 102, thus creating a first hologram 200, the first signal beam having a beam waist (left line segment joining two divergent beams in Fig. 3). Subsequently, the holographic medium is rotated and the same reference beam 112 and a second signal beam 114 corresponding to a second data are made to interfere inside holographic medium 10 at a different location 102, thus creating a second hologram 200', the second signal beam having a beam waist (right line segment joining two divergent beams in Fig. 3). See Figs. 1, 3 and [0190], [0201]. The first and second holograms overlap, however, the first beam waist and the second beam waist do not overlap at any point (see Fig. 3).

Regarding claims 33-34, 72-73, 77, the holographic medium 100 is located at the focus of lens 120, i.e., at its Fourier plane, which can also be considered as an image plane of the first signal beam.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 32, 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US 2002/0015376) in view of Curtis (US 5,703,705).

Liu discloses all the limitations of the above claims except for teaching that the waists of the signal beams may be formed outside the holographic medium. Curtis discloses a method for holographic multiplexing wherein a plurality of holograms are recorded in the same spatial

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location, with the recording beams having their waists formed outside the recording medium (see Fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a signal recording beam with waist outside the recording medium, as taught by Curtis, for recording holograms having greater area, thus enabling easier reading operation.

Allowable Subject Matter

Claims 2-31, 38, 40-70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if claims 16, 40-70 overcome the objection set forth above.

Claims 35-37, 74-76, 78-83 are allowed.

Claims 2-31, 35-38, 40-70, 74-76, 78-83 are allowable over the prior art of record for at least the reason that even though the prior art discloses holographic spatial multiplexing systems wherein the holograms are partially overlapped, the prior art fails to teach or reasonably suggest, regarding claims 2-28, 35-38, a method for holographic recording and readout including filtering the output beam to substantially contain only a reconstruction of the first hologram, regarding claims 40-67, 74-76, an apparatus for recordation and readout of a hologram, including a filter for filtering at least the second portion out of the output beam, regarding claims 29-31, a method for holographic recording and readout, including multiplexing a first plurality of holograms with the first hologram and a second plurality of holograms with the second hologram in the holographic media, regarding claims 68-70 and 78-83, an apparatus for recordation and readout of a hologram including a first plurality of holograms multiplexed with the first hologram and a

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second plurality of holograms multiplexed with the second hologram in the holographic media, as set forth by the claimed combination.

Liu specifically teaches that the crosstalk noise due to the existence of overlapping holograms is insignificant (see [0201]), hence no additional means for reducing the noise (e.g., filtering) is required. Furthermore, in Liu's holographic storage system, data is recorded in a bit-by-bit fashion (i.e., the existence of a holographic grating represents a first of two binary states, see [0189]), and there is no motivation to store multiple bits in the same spatial location (which is not possible with the apparatus shown in Figs. 1-2).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo Boutsikaris, Ph.D.
Primary Patent Examiner, AU 2872
March 24, 2005



LEONIDAS BOUTSIKARIS
PRIMARY EXAMINER